



Release No. 654

April 30, 1948

CATHODE-RAY TUBE

TYPES: 5RP1, 5RP2, 5RP4
5RP5, 5RP7, 5RP11

GENERAL CHARACTERISTICSElectrical

Heater Voltage	6.3 $\pm$ 10% Volts					
Heater Current	0.6 $\pm$ 10% Ampere					
Focusing Method	Electrostatic					
Deflecting Method	Electrostatic					
Phosphor	P1	P2	P4	P5	P7	P11
Fluorescence	Green	Green	White	Blue	Blue	Blue
Phosphorescence	--	Green	--	--	Yellow	--
Persistence	Medium	Long	Medium	Short	Long	Short

Direct Interelectrode Capacitances, Nominal

Cathode to all other electrodes	5.0 uuf.
Grid #1 to all other electrodes	5.4 uuf.
D1 to D2	1.8 uuf.
D3 to D4	1.8 uuf.
D1 to all other electrodes except D2	2.3 uuf.
D2 to all other electrodes except D1	2.1 uuf.
D3 to all other electrodes except D4	2.4 uuf.
D4 to all other electrodes except D3	2.2 uuf.

Mechanical

Overall Length	16 3/4" $\pm$ 3/8"
Greatest Diameter of Bulb	5 1/4" $\pm$ 3/32"
Minimum Useful Screen Diameter	4 1/4"
Bulb Contacts	Snap terminal ball contact
Neck Contacts	Special lateral contacts
Base	Medium 12-pin diheptal
Basing	11F
Base Alignment 1D2 trace aligns with Pin #5 and tube axis	$\pm$ 10 Degrees
Positive voltage on D1 deflects beam approximately toward Pin #5.	
Positive voltage on D3 deflects beam approximately toward Pin #2.	
Bulb contact alignment:	
Snap terminal contacts align with 1D2 trace $\pm$ 10 Degrees	
Contacts on same side as Pin #5.	



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MAXIMUM RATINGS Design Center Values

Anode No. 3 Voltage (accelerator High Voltage Electrode)	25,500 Max. Volts D-C
Anode No. 2 Voltage	3,500 Max. Volts D-C
Ratio Anode No. 3 Voltage to Anode No. 2 Voltage	10 Max.
Anode No. 1 Voltage	1,550 Max. Volts D-C
Grid No. 1 Voltage	
Negative Bias Value	125 Max. Volts D-C
Positive Bias Value	0 Max. Volts D-C
Positive Peak Value	2 Max. Volts
Peak Heater Cathode Voltage ¹	
Heater Negative with respect to Cathode	125 Max. Volts D-C
Heater Positive with respect to Cathode	125 Max. Volts D-C
Peak Voltage between Anode No. 2 and any Deflection Electrode	1,200 Max. Volts

TYPICAL OPERATING CONDITIONS

For Anode No. 3 Voltage ² of 10,000	20,000 Volts
For Anode No. 2 Voltage of 2,000	2,000 Volts
Anode No. 1 Voltage	
for focus	362 to 695 362 to 695 Volts
Grid No. 1 Voltage ³	-30 to -90 -30 to -90 Volts
Deflection Factors:	
D1 and D2	102 to 154 140 to 210 Volts D-C per Inch
D3 and D4	97 to 145 131 to 197 Volts D-C per Inch
Anode No. 1 Voltage	
for focus	18.1% to 34.8% of Eb2 Volts
Grid No. 1 Voltage ³	1.5% to 4.5% of Eb2 Volts
Anode No. 1 Current for	
any operating condition	0 to 600 Microamperes
Deflection Factors:	
No 3rd Anode or Eb3 = Eb2	
D1 and D2	30 to 45 Volts D-C per inch per Kilovolt of Eb2
D3 and D4	30 to 45 Volts D-C per inch per Kilovolt of Eb2
Eb3 = Twice Eb2	
D1 and D2	36 to 54 Volts D-C per inch per Kilovolt of Eb2
D3 and D4	36 to 54 Volts D-C per inch per Kilovolt of Eb2
Spot Position (Undelected) ⁴	Within 20 Millimeters square



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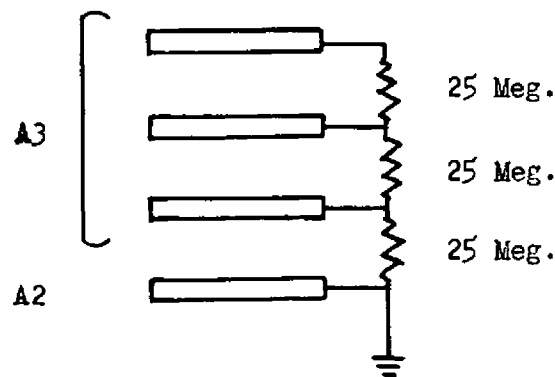
MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Max. Megohms
Resistance in any Deflecting Electrode Circuit ⁵	5 Max. Megohms

NOTES

1. Cathode should be returned to one side or to the mid-tap of the heater transformer winding.
2. Equally divided over the three intensifier electrodes.

Suggested method of connection:



3. Visual extinction of undeflected focused spot.
4. When the tube is operated at (1) normal heater voltage; (2) $E_{b2} = 2000$ volts; (3) $E_{b3} = 10,000$ volts; (4) E_{b1} adjusted for focus; (5) E_{c1} set at such a value as will avoid damage to the screen; (6) with each of the deflecting electrodes connected to Anode No. 2; and (7) with the tube shielded against external influences:

The spot will fall within a 20 mm. square, the center of which coincides with the geometric center of the tube face and the sides of which are parallel to the traces produced by deflecting electrodes D1 and D2 and by deflecting electrodes D3 and D4 respectively.
5. It is recommended that the deflecting electrode circuit resistances be approximately equal.

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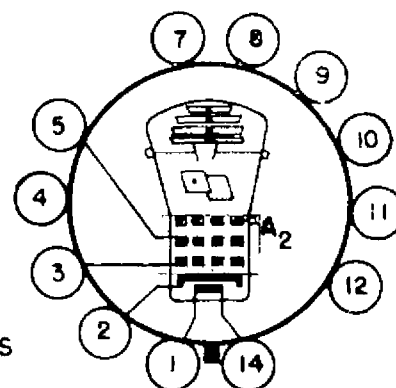
Technical drawing of a Cathode-Ray Tube (CRT) assembly, showing dimensions and labels.

Labels:

- CATHODE-RAY TUBE
- SNAP TERMINALS
- SPECIAL LATERAL CONTACTS
- MEDIUM SHELL DIHEPTAL 12-PIN BASE

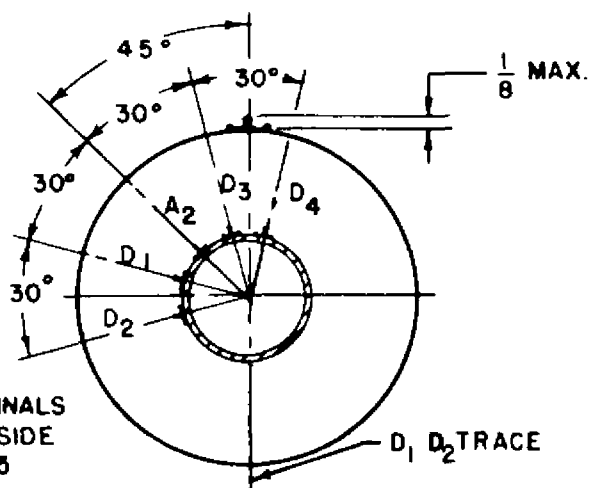
Dimensions (inches):

- Overall length: $16 \frac{3}{4} \pm \frac{3}{8}$
- Distance from base to start of tube: $11 \pm \frac{1}{4}$
- Distance from base to center of A2: $8 \frac{1}{2}$
- Distance from base to center of A3a: $3 \frac{11}{16}$
- Distance from base to center of A3b: $2 \frac{9}{16}$
- Distance from base to center of A3c: $1 \frac{1}{4}$
- Distance between A3a and A3b: $\frac{7}{16}$
- Distance between A3b and A3c: $\frac{1}{4}$
- Distance between A2 and A3a: $5 \frac{1}{4} \pm \frac{3}{32}$
- Distance between A2 and A3b: $8 \pm \frac{1}{4}$
- Distance between A2 and A3c: $8 \pm \frac{1}{4}$
- Distance between A2 and A3a: $2 \pm \frac{1}{16}$



14 F
BOTTOM VIEW OF BASE

PIN NO.	ELEMENT
1	HEATER
2	CATHODE
3	CONTROL ELECTRODE
4	INTERNAL CONNECTION
5	FOCUSING ELECTRODE
7	NO CONNECTION
8	" "
9	" "
10	" "
11	" "
12	" "
14	HEATER



SNAP TERMINALS
ON SAME SIDE
AS PIN 5

ALLEN B. DUMONT LABS. INC.
PASSAIC, N.J.

SECTION A-A

Σ - 7 - 48

SUITE 701-4 AMERICAN BUILDING
1317 F STREET, N.W.
WASHINGTON, D. C.

E. I. A.
REGISTRATION
FILE

November 4, 1949

b) The "special lateral contact" to which reference is made is, in fact, the J1-25 Small Ball Cap which is here shown as to salient dimensional detail.

Technical drawing of a bulb with the following dimensions and tolerances:

- $\frac{3}{16}$ " R. MAX.
- $\frac{3}{4}$ " R. MAX. (SEE NOTE)
- $\frac{3}{16}$ " MAX.
- $\frac{3}{32}$ " MAX.
- OUTSIDE CONTOUR OF BULB
- $\frac{1}{4}$ " R. MIN. TO FILLET
- $.113 \pm .005$ " DIA.
- $.056$ " R.
- $.080 \pm .005$ " DIA.
- $.150 \pm .015$ "-. $.010$ " POST
- $.150 \pm .030$ "-. $.010$ " RIM

[illegible]

By

LCFHorle/cap